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Lessons To Be Learnt From Two Professional Development Programs

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ABSTRACT: The involvement of teachers in any process which seeks to enhance classroom pedagogy is vital. In this area, professional development (PD) for teachers can be effective in developing and broadening classroom practices, but the process takes time. Teachers need time to reflect on their practice and be confident in implementing new programs and strategies by taking risks and employing different approaches in their pedagogy. There are various ways of initiating professional development which also take into account time for reflection. One is by the use of professional development to improve knowledge and skills. Another way is by teachers observing the practice of their colleagues before reflecting and modifying their own practice. This study discusses the findings of a case study where two different PD programs in a single secondary school were implemented with the assistance of two university lecturers. The study revealed that although there were positive reflections on the development of knowledge and skills from the PD, factors such as collegiality and time and infrastructure constraints impacted the teachers involved in both the Reflective Practice and the Technology PD programs. The school was part of the Brisbane Catholic Education Office (BCE) in Queensland, Australia and the researchers were both Senior Lecturers at the Queensland University of Technology in Brisbane.

Introduction

The research outlined in this article had been commissioned by Brisbane Catholic Education (BCE) and was part of a competitive, collaborative grant offered to universities throughout Australia. This was a one-year study which focused on the delivery and evaluation of two different professional development programs in one school. It also aimed to extend and evaluate the On model of professional development developed by the authors (Jetnikoff & Smeed, 2012). The program provided several extended professional development opportunities, where teachers at a Catholic school worked with the university personnel.

Literature

In line with the two professional development programs used in this research, two broad areas of research will be canvassed to establish the relevant literature in the field of effective professional development. First, teacher attitudes and beliefs to peer related professional development and reflective practice are canvassed (Schon, 1987), and second, the literature relating specifically to professional development around the use of ICTs in schools is covered. Professional development allows critical engagement with professional knowledge. Effective PD should provide opportunities for teacher capacity building (Crowther et al., 2010; Jetnikoff & Smeed, 2012) and the school community generally. To build teacher capacity, there needs to be a focus on the development of the teachers' knowledge and pedagogical skills (Darling-Hammond & Richardson, 2009; Hamilton, 2013). This should be considered a vital underpinning principle of all PD programs, since without learning, there can be no change or growth (Twining et al., 2013).

Programs should also meet other needs such as collaboration (Boudett & City, 2013; Hamilton, 2013; Jetnikoff & Smeed, 2012) and collegial respect. Both the PD programs allowed for collaborative learning opportunities which, in line with Vitulli, Santoli and Fresne's (2013) suggestions, involved the collective work of group members to accomplish the aims of the programs and allocate duties for each of the participants. In relation to collegiality, Hamilton (2013) posits that collaborative programs do engender collegial respect, but to be effective, they need to be flexible and carefully planned around agreed protocols. Timperley and Robinson (1997) suggest that collegiality needs to include protocols relating to how people interact, gaining consensus, care and support. This research was interested in the collaboration and collegiality between those involved in each program. How the teachers worked together to improve knowledge and skills was an important component of the research.

The two PD programs were also enacted at the school or on-site. Hamilton (2013) argues that on-site PD allows for embedded delivery and offers teachers the opportunity to learn in their own contexts. Professional development delivered in this manner also gives teachers opportunities to apply what they learn. All school contexts are different so PD carried out at the school can take advantage of knowledge and resources which may be specific to that site. An example of this is the PD for Harvard's *Data Wise Model* which is underpinned by the practice of teachers analysing and using their own class data in their own school (Boudett & City, 2013).

Time was an important element in both programs and two facets need consideration. Time was needed to deliver and implement the PD programs and the subsequent learning from them. Additionally, time is an essential element for teachers' deep and considered reflection (Iredale et al., 2013). Adequate time for collaboration before and during the program and reflection on teacher learning after the PD are important elements of effective teacher professional development which will be considered in this research.

The second PD program focused on the meaningful use of ICT in the teaching of English. There is a growing body of PD literature on the meaningful use of ICTs in educational pedagogy. Teacher qualities such as knowledge, self-efficacy, pedagogical beliefs, and subject and school culture are important factors in effecting change around ICTs (Ertmer & Ottenbreit-Leftwich, 2010). In Australia, educators face a need to address pedagogical change in the incorporation of computers into classrooms across the curriculum. The 'rollout' in the last two years of one-to-one

computers in year 8 classrooms means all these students are bringing these devices to classes in most schools. Since 2013, with the implementation of the Australian Curriculum, Assessment and Reporting Authority's (ACARA) Australian Curriculum (AC) in this state, ICTs have become one of the general capabilities (GC) and teachers are required to deploy computers and technology in their daily pedagogical practice (Jetnikoff, 2011). Indeed, the National Professional Standards for Teachers (Australian Institute for Teaching and School Leadership (AITSL), 2011) requires that teachers undertake PD as part of their continued registration. Part of ongoing teacher professional development must involve technological skills. Some teachers may fear taking on new technology, and also are wary of using ICTs in classrooms.

It has been argued that technology integration may challenge teachers' established identities, or threaten their authority in the classroom (Curwood, 2014), since their students may know more than they do in terms of technology. One factor that may facilitate effective integration of ICTs with in-service PD is to include teacher reflection on the process (Walsh, Bradshaw & Twining, 2012). This is consistent with the ongoing nature of the On model of PD, since the focus groups in the research design of our study provided group reflection on both the PD program of the teachers and their implementation of new skills. Of course, ours is one small study in one school working in a wider system. Key working parties in the United Kingdom have found that 'effective PD for teachers requires changes at several levels of educational systems (political, institutional and individual), and that ICTs should be seen as an opportunity for introducing new goals, structures and roles that support these changes' (Twining et al., 2013, p. 426).

Certainly, systemic change in ICTs in education is needed at the level of school data management systems, as well as at the level of teachers' expertise in handling technology, and these impacted on our collaborative case study. The United Kingdom literature on PD in the area of ICTs tells us that it is also more effective if it works from the 'ground up', so that teachers are not just subjected to externally designed technology courses (Walsh, Bradshaw & Twining, 2012). This was a guiding factor in this Australian ICT PD program and research project. The collaborative team worked with the school's English work program so that teachers contributed to their PD learning, to develop specific skills which they could then apply to the classroom. In our study we have attempted to create an ongoing collaborative partnership between the PD facilitator (the university lecturer) and the group of teachers participating and carrying the skills and knowledge forward. One idea from the On model is to work with the teachers to allow them to find and develop the expertise within their own community, so that skills and knowledge from PD are sustainable beyond the program itself. If a school can create a community of practice around ICTs integrating technology, such as establishing a culture of technology integration, modelling technology use, and creating teacher leaders, adoption of new technologies is more likely to be effective (Kopcha, 2010). In this way teachers are not subjected to a one-off workshop offsite, only to flounder alone, when they try to implement the new ideas and skills in their individual classrooms.

The PD Programs: What we did 'on the ground'

The project consisted of two combined PD and research programs, focused respectively on two different groups of teachers in one secondary school. The PD first group (Program 1) comprised 13 teachers, middle management and senior leadership involved in professional conversations.

The program emerged from peer classroom observations, which took place after a PD session. The second PD group (Program 2) comprised English teacher focus groups following two PD sessions on the application of technology in English.

In the 12 months prior to the project, one of the researchers had worked with the senior leadership and middle management in areas of data use and school performance. The teachers involved in the previous year's PD identified problems in relation to the students' lack of higher order thinking in the curriculum. This use of knowledge gained from data analysis was in line with one of the On model's principles of PD needing to be relevant to the school context. There was a desire from both the school and the external consultant to extend the knowledge learnt in this original program and to ensure that higher order thinking was addressed in each subject area in classrooms. Though there was a desire to improve this, the intent of the observation was not to solely concentrate on this area with the exclusion of other types of observations. In short, the PD for the first program involved a group of teachers visiting one another's classrooms to observe how higher order thinking, among other things, was either implemented or not in the observed lessons. The higher order thinking part of the observation was considered through the lens of the school's current curriculum approach – *The Dimensions of Learning* (Marzano & Pickering, 1997).

Dimensions of Learning is a commercial framework used by some schools around the world. The framework forefronts 5 Dimensions as being important in the learning process. They are:

1. attitudes and perceptions
2. acquire and integrate knowledge
3. extend and refine knowledge
4. use knowledge meaningfully
5. habits of mind.

Higher order thinking particularly relates to Dimensions 3 and 4. In the classroom observations conducted by participants, these would have been of particular interest to the visiting teachers.

Each teacher involved in the program was visited by an observer, who was not necessarily from the same subject area as the teacher delivering the lesson. After the lesson, the observer considered what s/he had seen and engaged in a targeted professional peer to peer conversation. The reflections on this process were recorded in the focus group for Program 1.

In PD Program 2, following the protocols developed in the On model of collaborative PD (Jetnikoff & Smeed, 2012), meetings were held with the middle management teachers, the Dean of Curriculum and the English Head of Department for the technology part of the project. An initial 'needs analysis' survey was conducted to determine the school's technology infrastructure; teacher access to technology hardware and software; and the desired teaching and learning outcomes of the English teachers. These initial planning meetings established the specific content of the PD, the times and the participants of the workshops and follow up reflective focus groups. Planning meetings are an integral part of the collaborative On model, as the PD needs to be aligned with the English Work Program needs of the school. The PD workshops and research evaluation needed to coincide with the school's Year 8 English Work Program. We originally agreed that the university lecturer would run three ongoing PD workshops at the school. This was later reduced to two, due to time constraints and availability of the relevant Year 8 teachers over the course of two

semesters. Both English PD sessions related to developing teachers' knowledge and skills to teach two Year 8 assessment tasks using online and offline computer technologies. The first PD session (with 9 teachers) focused on developing technology skills and knowledge to teach the creation of an advertisement. The second (with 7 teachers) focused on digital storytelling with poetry. Two voluntary focus groups, involving 5 and 6 teachers respectively, were conducted with the teachers who participated in the workshops after they had implemented the new skills and knowledge from the PD into their teaching. This enabled teachers to evaluate the program's effectiveness for the teachers and learners and to reflect on the school's approach to the use of technology in English.

Research Design

The purpose of the research study was to determine if the On Model of PD was effective in terms of the knowledge and skills covered by the intervention, and if these were sustainable beyond the life of the project. The design based research involved a needs analysis survey for both groups and an agreed upon intervention. In Program 1, the school's high-stakes data were analysed and a specific area of need (higher order thinking) was identified as an area of weakness. Observations were undertaken to establish if teachers were teaching relevant higher order skills. Program 2 involved two iterative technology centred PD sessions, followed by teacher-participant reflections in focus groups. These focus groups followed the process of implementation of the new knowledge and skills involved in the work program interpreting the new Australian English Curriculum. Both technology interventions involved working with the teachers on the grammar of visual design in creating multimodal texts. After the PD workshops, the knowledge and skills from each of the PD sessions were implemented through to assessment with all the Year 8 classes across the school. The evaluation of the intervention occurred in two research focus groups, where participating teachers discussed their knowledge of technology and confidence and skill level in using it, as well as the ripple effect on the learning outcomes of the students after using the technology.

Findings and Discussions: Four common themes

There were four common themes, gaining of knowledge and skills; administration and infrastructure; time; and finally, collegiality, which emerged from a coded analysis of our transcribed interview data from both programs' respective research focus groups. The analysis for each program was undertaken in isolation by the relevant researcher and a research assistant. Once themes from each program had been identified, both researchers met and discussed common themes. These were largely positive reflections on the development of knowledge and skills, and collegiality and more problematic discussions and reflections on time and infrastructure constraints.

The coding of the quotations from the respective focus group interviews have been numbered, with the letter T representing teachers in Program 1 and TT, representing 'technology' teachers in Program 2, to protect the identities of the participants.

Reflections on Gaining of Knowledge and Skills

Though Darling-Hammond and Richardson (2009) refer to professional development as the expansion of both knowledge and practice of teachers, in the observation and professional conversation PD (Program 1) the teachers tended to focus their observation on the improvement of pedagogical 'skills', rather than how the program improved particular subject knowledge. However, in the comment about learning goals from T17 below, there is evidence of the second Dimension of Learning (acquiring and integrating knowledge). However, the acquiring of knowledge would not imply higher order thinking. It is more closely related to knowledge and comprehension which are part of the lower order. On the other hand, T17 comments below that graphing would indicate that there was high order thinking synthesising happening in the lesson.

> I guess for me … getting used to using the learning goal at the beginning of the lesson to make sure that the students are aware of it. When I watched Participant X they kept coming back to the learning goal and checking on it constantly which, for pedagogy ... I thought it was quite successful and it worked well for that class. So now that's something that I have adopted a little bit. (T17)

In terms of improvement of pedagogical skills, there were several comments about learning from teachers who observed colleagues from different subject areas:

> So looking at how, not only in your own [subject area] but in others, how they teach and get learning to happen but probably in different ways that we don't think about in our own area … and maybe have some ideas that we can use then and develop into our own particular learning style and strategy. (T12)

> I really liked what Participant X did with their class. It was a maths class and they kept bringing it back to what the point of the lesson was. And at the end they gave them a summary sheet of all the concepts that had been learnt during the lesson. They not only heard it, they got to read it and look at it and do a little exercise based on it. So they kept bringing them back to it, which I thought was terrific. (T21)

This is an example of on-site and collaborative PD (Jetnikoff & Smeed, 2012) where teachers from unfamiliar departments were visiting colleagues' classrooms. Researchers such as Hargreaves (1994) refer to the *balkanisation* which takes place in secondary schools. This occurs both at a physical level, where each department occupies a particular part of the school and also in terms of pedagogical practice. Department becomes 'balkanised.' The participants were unknowingly challenging the notion of balkanisation (Hargreaves, 1994). They admitted that there had been some useful pedagogical learning from watching a lesson outside their own subject area. Teacher 12 addressed the importance of breaking down the 'balkanisation'.

It was interesting that all the participants indicated that they had learnt from watching teachers from outside their own departments and had not realised they sometimes taught similar content in very different ways, such as the use of graphs in both Health and Physical Education (HPE) and Maths. These comments relate strongly to the gaining of pedagogical skills, and not necessarily the accumulation of knowledge, particularly knowledge of higher order thinking skills. This lack of consideration for knowledge in comparison to pedagogical skills is highlighted in T14's comments below:

> I think from my experience and just looking at the first question about 'professional conversation in dimensions of learning', I think if we are honest, all of us went and it was more about learning different strategies, learning behaviour management. I think the

> Dimensions of Learning (DoL) part was not our sort of focus because when watching DoL, that's fine, but I was getting so much more out of it … bigger than DoL.

This lack of focus on Dimensions of Learning was also highlighted in the following exchange between the facilitator and the group. In summarising, the facilitator commented: 'so there needs to be more structure as to what dimension you're focussing on and what you're actually going to look at in the lesson?' The whole group answered 'Yes'.

The teachers in PD Program 1 commented predominately on their learning in relation to pedagogical skills. The teaching of higher order thinking skills through *Dimensions of Learning* were either not addressed by the teacher or ignored by the observer. They also commented on learning from teachers in other departments but these comments were also related to pedagogical skills and not knowledge. In contrast, the teachers in PD Program 2 commented on both the knowledge and the pedagogical skills.

Knowledge and skills brought by participants in the technology part of the project (Program 2) were varied, so we assumed a basic knowledge of the software programs and tried to work from what people already knew, in order to develop their skills to a more advanced level. English teachers came to the PD sessions with varying technological skill levels, just as their secondary students came to the task with varied experience and ability levels. The aim of the PD workshop was to augment the knowledge and skills of the English teachers using available software, MS Word and PowerPoint, to make a print advertisement.

In the first PD workshop we asked the teachers to make an advertisement, just as their students would have to do. The facilitator/researcher's background is in English teaching and Film and Media at secondary and tertiary levels. In the first workshop the university lecturer also worked with a research assistant who had a background in graphic design and advertising, and together demonstrated advanced skills of image manipulation and layering, composition and layout using the two software programs. Some of the English teachers were familiar with some of the skills we taught and modelled, but most were not.

What became apparent in the PD workshop was that the participants were unaware of their colleagues' existing knowledge and skills with technology. One of the English teachers, for instance, was an erstwhile marketer, and other teachers had a visual art background and expert knowledge of composition and visual principles. The youngest English teacher, who had just joined the teachers as a beginning teacher, identified herself as very *au fait* with digital technology. These skills emerged as the two PD facilitators monitored people's progress during the workshop. The laptops the teachers brought with them also varied in age and technical sophistication. Some lacked built-in microphones or sound cards, so they were unable to complete parts of the PD task that required audio recording. Thus the teachers' PD workshop was similar to their classrooms since it emerged later that their students also had varied skills and different machines.

As well as the software applications and affordances, the university lecturer introduced to the eight participants the principles of visual grammar, to give them a common technical metalanguage with which to talk about aspects of visual design with their students. The new knowledge covered in the PD also involved sourcing copyright-free images and music. These aspects of the PD constituted new knowledge for all the English teachers. Although this was well understood and received by teachers it did not always translate into their classroom practice exactly as we taught it in the sessions. Each teacher made adaptations around the teaching of the

metalanguage for the needs and ability levels of their students. In most cases the teachers reflected that they used the visual grammar 'in a simpler form'; in other words they did not teach it through the visual metalanguage which had been highlighted in the first PD session. Although eight teachers participated in the PD session, only five of them actually taught the Year 8 advertisement task and attended the follow up focus group some months later. All five teachers had, however, applied the technology skills learnt in the PD sessions to their teaching.

Of the five focus group participants only two teachers took the conceptual knowledge of new metalanguage of visual grammar and used it with their students in the classroom. In both cases they were already fairly technically competent. The beginning teacher, who self-identified as *au fait* with the technology, commented she did not know the metalanguage of the visual grammar. As such, she was 'not struggling with the tech aspects of teaching the task'; she could concentrate on teaching the visual grammar language elements.

> I knew most of the computer stuff, other than that I think it helps me to narrow down just what sort of things we should package and teach as visual grammar. There is so much more to it, it's quite broad, if you didn't have it bundled up as these six dot points to include. I think that helped to improve [the student work]. But technology-wise, I knew most of it. (TT1)

The same teacher said later:

> I did a little bit on the visual grammar that you did, just in a more simple form, just in terms of getting some of the terminology. Probably only a few actually understood and used it in terms of discussing the foreground of their ad and that kind of terminology, others were more plainly spoken about what was in their ad, whereas others really did deconstruct it. (TT1)

The other teacher who actively taught the visual grammar metalanguage had an 'extension' class. He had designed his own advertisement, which he based on the ones we modelled in the PD session. This teacher taught a class of gifted students how to access non-copyrighted, Creative Commons © licenced images and advanced skills of visual grammar and use of the software, which were modelled in the PD session. When discussing the metalanguage around visual grammar he said:

> So I think (with my class) it's mostly students who are more capable in English, I think they really grabbed on to that, and so there seemed to be an understanding, and some put it in well, and some used the terms almost in the right way, others attempted. I think they felt this is something I don't know, and they felt good learning something ... So I think for those kids, it was actually helpful. Whereas if we'd maybe just gone for simpler language and terms, maybe they would have just thought we know that anyway. (TT4)

This teacher's students were keen to apply the new knowledge and partly he attributed that to his own enthusiasm.

> I think I was more excited about that and the copyright-free images which I've always struggled to find. And so those things are what a lot of students actually wrote about, and some of the simpler things they didn't … probably because I just went through it and didn't get as excited about it. The things I learnt, I probably passed on the enthusiasm. (TT4)

This attitude of effective PD enthusing teachers to try new things in classrooms is supported by the literature (Jetnikoff & Sklavos, 2011). Other teachers said their students didn't want to use the visual grammar terms. It is not clear from the focus group data if this was a result of teachers

presupposing their Year 8 students were not mature or adept enough in taking up the new terminology, or if the teachers or students really did not want to use the metalanguage because they were already struggling with the technology component of the task.

Another teacher, with a background in marketing, commented on the need for her students to 'make images their own' and she had applied the new image manipulation skills from the PD sessions:

> Technology wise, I used to be a marketer, so it was very familiar with PowerPoint, but similar to T1, I was coming from the angle of how can I take this into my classroom and make it understandable for the students? That was the ambition for me. (TT3)

> I went through just showing them as a class how to change the pictures like you showed us. And they didn't realise that you could do it, that once you took a picture and put it into PowerPoint that you could make all the changes. (TT3)

Another teacher agreed that the new skills gave her useful IT classroom strategies.

> … There were lots of little tricks that I didn't know. So I found that really useful. (TT2)

The skills and knowledge developed in the PD session were certainly learned by the teachers but this did not always extend into the classroom practise exactly as we delivered it in the PD session. This adaptation shows that these competent teachers were responsive to the needs and ability levels of their students, which varied according to the IT skills they brought from home and from other subjects. Teachers commented on their anticipation of using students' ability differences for collaborative learning in future.

> Probably in picking up on the diversity of skills, there were some students who could do things ... but then they didn't know how to do something else. So maybe getting some sort of collaboration of students, who do have the skills, with those who don't. (TT4)

When asked what specific aspects of the PD were useful to them and what new things they had learnt, they were very positive about their new knowledge and skills. All teachers agreed, they were excited to be able to pass this knowledge on to the students. When asked if their understanding or pedagogical practice deploying technology had changed, in any way, as a result of what we did in PD, one teacher summed this up by saying: 'I guess I am expecting more of the technology now because I know more can be done'.

Administration and Infrastructure

Our investigation revealed that both PD programs engaged in by this school needed to be externally supported either by administration or infrastructure or both. Responses from PD (Program 1), the professional conversations program, focused on administrative problems, particularly those concerning timetabling issues. In fact, 58 percent of the comments in this theme had to do with timetabling issues. In contrast, the infrastructure concerns with the English teachers in PD (Program 2) centred around the systemic problems pertaining to hardware and data storage and data management and to a lesser extent on software problems. Responses from each of the two groups of participants will now be outlined and discussed.

Timetabling

Several Program 1 teachers commented on the problem of timetabling issues:

> The problem was some people got cover and some people didn't. (T15)
>
> When Participant X was supposed to come, the Year 9's were off for the day doing something else. We then tried two, three or four times to get things but either they had something on or I had something on. (T18)
>
> For me the stress was trying to understand the timetable. (T13)
>
> But I found the timetable very confusing to understand where I was going and who was watching who and if you were getting watched. And if someone was meant to watch you and they just didn't turn up. (T11)

There appeared to be several concerns about the timetabling. There were equity issues raised by Teacher 15, logistic issues by Teacher 18 and confusion and stress stemming from the timetabling. These were administration issues which are usually comparatively easy to address. However, if a program is not administered appropriately, the goodwill towards it can quickly evaporate. Equally, if the infrastructure to support a program is not apparent, goodwill from the teachers will also be tested. Both administration and infrastructure are also affected by time constraints in busy schools. This will be addressed in the following section. Infrastructure concerns were also apparent for the English teachers.

Infrastructure

In the technology PD project (Program 2) teachers discussed constraints around systemic infrastructure, such as an effective learning management system (LMS) and others pertaining to individual hardware problems with computers and printers and focused to a lesser extent on software problems. The focus groups revealed concerns around the larger technology infrastructure of the school, such as a lack of a whole school LMS, and other hardware shortcomings. Of course, this is not unique to this school as there have been many systemic, financial and policy constraints across all school sectors in the transition to the ostensible Australian 'education revolution', such as filtering and blocking access to streaming sites (Jetnikoff, 2011).

Teachers and students are all equipped with one-to-one laptops in this particular school, but there were limitations around the use and usability of these. The centralised loading of software onto students' computers and necessary filters on the specific educationally relevant software on school computers meant we needed to work with those available programs for the PD and for the implementation of it into classrooms.

Teachers faced on-the-ground difficulties in teaching with technology due to the short life of laptop batteries. The school's policy required students to go to the library to charge their batteries. This had implications for planning and using ICTs in the classroom. Teachers said if they wanted to do any effective work with computers they had to 'schedule these in the early part of the day'. There was general agreement about this concern in the focus group, as expressed by one teacher:

> I think the other thing I know I am constrained by is where your lesson falls in the day. I'm very conscious of not relying on computers in lesson three or four. The batteries … they run down so quickly. If you go in to lesson four wanting heavy computer usage

> you're asking for disappointment. You're better off traditionally teaching. Unfortunately, that's a factor in your planning. (TT1)

Further to these constraints, the school's policy, understandably, restricted the use of mobile phones in class time. This meant that access to photographs and audio visual material, which young people typically store on their phones, was not available to them to import into their software programs, at least in class. This is a common policy in schools across the state, and so is not unique to this school. Mobile phones are a double-edged sword in classrooms, because young people who could use them for class activities are easily distracted by the multi-functions and apps on their phones, which is partly why they are often banned in classrooms.

Teachers also discussed the difficulties in monitoring what students are doing when they are using their laptops. Further to this was an issue regarding the software students had loaded onto their computers outside of the centrally loaded software. Students accessing these peripheral programs, such as games and instant messaging, in class time led to concerns about whether or not students were 'on task' when using computers in classrooms. This concern was expressed by all participating teachers.

The school was deploying a networked system called AB Tutor which ideally allows teachers to control, manage, monitor, demonstrate, support and collaborate with their students. They discussed the shortcomings of AB Tutor which allows teachers to see what students are doing on their computers, but which cannot function if the teacher is trying to teach something to the whole class. As one teacher noted:

> The thing is we can have AB Tutor running, where you can see students' screens, but you can't have that running while you're using your laptop to teach them things. It's a Catch 22. If they're working, drafting or something, you can have AB Tutor on, yes you can see what they're doing, and you can shut them down and that sort of stuff. But if you're teaching, you can't. (TT5)

Other teachers explained further how adept the students are at 'not paying attention' to the task at hand:

> I struggle a bit, I know how tricky they are, they just flick a screen … by blinking, I can be standing right next to them and I see something whoosh down, and (they say) 'no no, I've been working …'. (TT1)

> I sit at the back of the room whenever I have a class (where they're working) on their laptops. I find AB Tutor, if it's disabled on one of their machines, or if they're not on the internet, you can't view it. So they have to be connected to the internet. They might have saved games on their laptop, they just can't … you can't trust them and they can't trust themselves, they can't stop themselves … especially the boys. (TT3)

Skills in ICTs must be developed as one of the General Capabilities across all subjects in the new AC. There is a common misconception however, that if students have a laptop each all their problems will be solved. Computers are not the only technology required. There are peripheral technologies that also need to be made available for IT tasks to be effective, such as printers. In the absence of an effective shared drive or LMS such as Moodle or similar, older technological delivery alternatives needed to be deployed. The school had Moodle operating, but it was not available to all teachers and subject areas. The Year 8 advertisement task required submission of both a soft (electronic) and hard (printed) copy of the final product to simulate a magazine context.

Since English was not one of those subject areas using the LMS at the time of the research, extra time was required for teachers to have students email their work to them, which the teachers had to save to disk for displaying on projectors and data screens for the persuasive oral justification component of the Year 8 task. Inadequate technology support and infrastructure is a source of frustration in many schools (Jetnikoff & Sklavos, 2011). One of the possible ways around storage and access issues is to use secure cloud technology, which I discovered in the second focus group the school was moving to in the following year. This should make the whole business of storage, retrieval sharing and display of technology tasks and files much easier and less time consuming for teachers and students.

Time

Another principle of the On model is that time for PD needs to be considered in the school's timetabling needs. The focus group reflections centred on the teachers' lack of time to engage with the program (Program 1) and with the quotidian restrictions of school life which affected the implementation of the knowledge learnt in the PD (Program 2). The On model of PD recommends that any program needs to work with the time frame of the participants and the time demands of the institution. This means juggling the timetabling needs and priorities of the PD professionals and the school teachers. Since the PD sessions had to be conducted after school hours, they were competing with a myriad of other demands from the school community and the university as well as people's personal and professional lives. Time constraint concerns are not unique to this institutional setting. It is a well-known fact that needs no referencing, that everyone in education feels time-poor no matter what the sector or subject area.

The peer observation and professional conversations (Program 1) teachers articulated that they felt the reflection phase of the process was 'rushed' and that there needed to be a greater time allocation to the observation program.

> … but I don't feel like I've engaged. I got out of it everything that I could have because I do feel like it was so rushed. I think there's value in it, and I can see the value in it, but I feel I've missed much of what really could be … (T13)

> … we need to be given enough time to sit down and do that because the way that we had our conversations were over coffee or at our desks. It was very informal. It needs structure. (T20)

The issues of time, and particularly feeling rushed, were important because as T13 articulated, it affected his/her feeling of engagement in the program. Even so, Teacher 20 stipulates (above) that the lack of time to reflect was a problem. Another teacher commented that the program would have been very, very successful with greater attention to the times when observations took place.

> But if it was planned and those three designated times were allocated, it would have been very, very successful. (T22)

In the case of the PD technology project (Program 2), time constraints affected the number of PD sessions and focus groups we could run. The time between the PD sessions and the focus groups had to allow for teachers to learn the skills and then implement them into the classroom all the way through to assessment, to see if they had had an effect on learning outcomes. Time also impinged on the pedagogical implementation of the new technical skills and knowledge in the classroom. If policies and infrastructure, such as reliable hardware and online systems, do not

support the transition to complete classroom computer use, teachers have to find workarounds to accommodate these technological problems in the classroom. The problem of a lack of effective monitoring and networking mentioned above also contributes to working with computers, resulting in losing time rather than saving it.

> One other thing I think is … just the time it takes to do technology. And all you have to do is have a student away or whatever and suddenly … so I think in any sort of unit like this you just have to expect that if they have to do anything on computer it's going to take an extra two or three lessons, unless they have that time at home. (TT4)

> … A lot of mine did a lot of time at home. The ones who aren't so motivated, … because they aren't so skilled, didn't have time to get things done or just to see ah, you can improve this … and to go around to each student. (TT4)

There is a common myth that computers and online technologies make learning more efficient. The 'flipping the classroom' model of teaching and learning where technology-based activities are done outside of school lies at the extreme end of the student centred learning continuum. This approach sits well with science and technology subjects, and is touted as time saving. Flipping the classroom is sometimes accessed through expensive 'ready-made' videos to be accessed by students, rather than demanding the teacher produce all the resources in their own time. These also require access to a readily available online LMS and existing sites such as *YouTube* or *TeacherTube*, which are blocked in most schools in this state. However, most schools have not adopted the 'flipped' model, and still struggle with the ubiquitous use of computers in the classroom. What happens is that known pre-technology pedagogies are resorted to, in order to fill the gap left when the computers cannot be used.

Collegiality

Collegiality emerged as a benefit of Program 1. Teacher 13's comments relate to collegiality, beyond the initial reflection process, in that s/he notes the extra professional conversations the participants had:

> Participant X and I have had more than one chat and it's been more looking over how they plan in HPE and how they plan to embed DOL [Dimensions of Learning] over the whole term rather than just one person coming to your class for that one lesson, because DOL is something that you embed over a long period of time, since the program completed.

This comment relates to the on-going expectation of the PD program which is consistent with the sustainability aim of the On model (Jetnikoff & Smeed, 2012).

In terms of classroom visitations, the group as a whole was quite emphatic that they wanted to be observed by a peer, not a member of management or school leadership. This notion is supported by Hamilton's (2013) research which found that peer to peer observation led to collegial respect. In this study, T11's comments in relation to peer observation were reinforced by the group.

> I had someone that I hadn't chosen to watch me. And the conversations were overwhelming and intense and I had to go away from the conversation and then come back and ask 'Is this what you said?' because I couldn't read their notes and it was a very intense experience for me.

> Facilitator: So you'd rather be watched by your peers than another level of the hierarchy?
>
> Group: Yes.

Teacher 14 also suggested that there needed to be a discussion about who observed who prior to implementation. Teachers were satisfied when this happened, as seen by the following comments.

> I think it was fine. We got to have a discussion about who we were going to see before we saw them and so we all knew what we were expecting so it was fine. (T14)
>
> I think because we got to nominate who went and watched, you naturally picked people who you were going to feel comfortable with. So that was a nice part of the process. (T13)

The comments of the participants in relation to collegiality were dominated by the important issue of the status of the observer. There was a consensus about the observer needing to be a peer and to be someone the teacher was comfortable with. Teachers clearly preferred to be observed by peers rather than colleagues in more senior positions. Reflection in the PD Program 2 focus group on this, and implementation of the project from the PD right through to the teaching and assessment, is a valuable part of the process and reflects the collaborative, and time components of the On model. If the PD session is a one-off workshop unrelated to their immediate teaching context, teachers are less likely to apply any new knowledge they have gained. In this case, reflection allowed teachers to discuss with each other what they had experienced individually, to share ideas, and to plan how they might do things differently in the future. For instance, when asked if they would do anything to teach differently next time, one said she would teach it 'more repetitively, and come back to it and revisit it more. When I was looking at the magazine advertisements, I could have done the visual grammar'.

The importance of collegiality was also a feature of the technology group. In the first focus group following the PD session on advertising, teachers reflected on the new knowledge they had learnt with each other, both in the focus group and independently, which is the ultimate aim of an effective PD session. In the focus group following the advertisement task, teachers mentioned that they had spoken to each other about the new technology and knowledge they had learnt. One teacher said to general agreement from the rest of the group:

> Yes, that [the visual grammar] was good. And it was also good just to have discussions with other staff members about how we can use it. (TT3)

In the final focus group the leading teacher suggested that collegial sharing of the expertise from the experience of the PD will be beneficial for the future teaching and planning. This shows the PD skills and knowledge will be sustained beyond the program by the uptake amongst the teachers.

> What I probably would ask is that because Year 7 teachers [will be] specialist next year, it will be T1 and T2 who have had experience with this … to write down those things and pass them onto to … the Year 7 teachers throughout the year, not just for this unit. We will probably have extra meetings where, you know, we're talking to each other … because there are five new staff to the school. (TT6)

The English teachers often felt there was not enough time to do all that they had to do, but there were positive outcomes resulting from approaching tasks with a unified technology based

approach, both in terms of teacher knowledge and in terms of student outcomes. One senior teacher said on reflection:

> Last year, when we did the same task, we didn't have the whole-grade approach to using technology and using the ideas generated by the previous PD. So it was a lot cleaner in terms of what the students produced, because last year there was a real diversity in hand drawn as opposed to ones with a common use of the same programs. And I think it made it a lot more important to the students, they took it a lot more seriously. (TT5)

In the second focus group for PD (Program 2), the teachers reflected on how they would change their pedagogy as a result of reflecting on the post-PD implementation. Taking the new knowledge into the classroom was the best way to evaluate their ability to pass these skills on to their students. One teacher said: 'I would do this [digital storytelling] differently next time and use the visual grammar we learnt in the first session more and break it down … because it came into this task again, so it builds on the knowledge'. When I complemented her on being a reflective practitioner, another teacher said: 'Well it is a lazy teacher who doesn't reflect on their practice'.

To make the new knowledge and skills sustainable into the future without the need for the change agent or PD facilitator to be present is one of the aims of the On model. Tapping into teachers' experience of new knowledge was very positive. Before they embarked on the PD, people did not know exactly what others knew about technology. This is the way that effective PD can work, to empower the teachers to be part of a community of practice, to work collegially in order to move forward into the future.

Final Discussion

In our final analysis we can suggest that PD is made more effective when it follows through to implementation, and includes ongoing evaluation and reflection. It is not common for PD delivery to be combined with a research agenda, and so this study was revealing in what was and was not effective. This extends beyond the remit of the PD itself to reveal how schools can militate against the success of programs implemented in a top-down way. When administrative and hierarchical insistence on particular PD to fulfil the requirements of the teacher registration is imposed from above, teachers just have to comply. This is not always the most effective way to organise or implement PD programs in schools. When critical or evaluative reflection is built into the PD, as it was in this case due to the research arm of the collaborative project, the strengths and weaknesses of the PD come to the foreground. Positive results are more likely when the participants have a stake in deciding on the programs they undertake. When teachers are actively involved in the content and organisational aspects of the PD through to implementation, they can see its relevance to their immediate work. Learning new skills to manage changing aspects of work, such as managing the ubiquity of technologies, in this case revealed a lack of infrastructure in schools. The PD reflection led to collegial solutions, such as an effective LMS to counteract lack of peripheral technical infrastructure. Teaching can be an isolating business, where individuals rarely get time to reflect on how to improve things collectively. When time for professional reflection and collegial discussion, problem solving and future planning are part of the mix, PD in schools can be effective and sustainable. In the long-term, even though this project was a collaborative and collegial partnership, the ultimate aim of the learning inherent in the On model of PD is to make it sustainable beyond the PD program itself. This takes an investment of time to engage, evaluate

and reflect on what is important to the collective teachers and to each individual taking part in their own professional development.

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